Minutes for Rule 21 Working Group Meeting #61
October 27, 2004
Pacific Gas & Electric, Oakland, CA

There were 31 Working Group members in attendance in person or conferenced in by telephone. The next regular meeting of the Working Group is scheduled for December 2 at San Diego Gas and Electric's offices in San Diego.

Scott Tomashefsky, Chair

Aldridge	Pat	SCE
Blair	Tom	City of San Diego
Blumer	Werner	CPUC/ED
Brooks	Bill	Endecon Energy
Brown	David	SMUD
Cook	Bill	SDG&E
Couts	George	SCE
Duggan	Kevin	Capstone Turbine
Goh	Jeff	PG&E
Grebel	Ed	SCE
Huang	Hann	ANL
Hyams	Michael	San Francisco PUC
Iammarino	Mike	SDG&E
Jackson	Jerry	PG&E
Luke	Robin	RealEnergy
Mazur	Mike	3 Phases Energy
McAuley	Art	PG&E
Minnier	Randy	MPE Consulting
Monson	William	MRW & Assoc.
Ng	Steven	PG&E
Patrick	Robert	Valley Air Solutions
Prabhu	Edan	Reflective Energies
Ross	Jim	CAC/EPUC
Savidge	Dylan	PG&E
Sheriff	Nora	CAC/EPUC
Smith	Richard	SDG&E
Solt	Chuck	Lindh & Associates
Torribio	Gerome	SCE
Tunnicliff	Dan	SCE
Whitsel	Kim	PG&E

Process and Combined Group Notes

Rule 21 Advice Letter Progress and Status
SCE and SDG&E have pending advice letters that will more closely cite IEEE 1547 provisions throughout the Rule 21 tariffs. PG&E's filing is pending resolution of an ongoing protest by the City of San Diego regarding the ability of Rule 21 to export power. The next step in resolving the City of San Diego dispute is a phone call between Tom Blair, Mike Iammarino and Werner Blumer. The group anticipated that conversation to be held as early as October 28.

CRS Quarterly Data Reports (Per CPUC Resolution E-3831)
.As discussed in previous meetings, the group's desire is to eliminate the utilities' need to file a quarterly report on CRS activity per CPUC Resolution E-3831. While a report was filed earlier this month, the intent is officially eliminate the report filing by the next quarterly report date in January. Scott will attempt to resolve this with Valerie Beck of the CPUC's Energy Division before the next quarterly report is due.

PUC Data request
Valerie Beck has made a data request of all 3 utilities to try to determine what non-utility generation exists today. They have all responded. The WG indicated they would like to have access to those responses.

DG Activity Reports
The SDG&E report was distributed before the meeting. All 3 utilities indicated they would have current reports available at the December 2 meeting in San Diego.

DG OII (CEC-04-Dist-Gen) Action item review
Scott requested that all documents and comments on the 5 issues be in his hands by 9:00 Monday, November 1. He will distribute a draft on November 5 and will have a meeting in Sacramento on Nov. 8 to discuss the draft. The final report will be presented to the Integrated Energy Policy Report Committee by close of business on November 10. The report will also be docketed and distributed to the R.04-03-017 service list, the Rule 21 service list, and the Energy Commission's DIST-GEN list server.

Net Generation Metering
Nora Sheriff distributed Version 6 of the Net Generation Metering section on October 15. She then received comments and incorporated them into Version 7 which was distributed on October 26. PG&E provided a matrix which lists the various tariffs that may or may not require net generation metering, including tariff and data requirements and whether a meter is needed and/or required to be owned by the utility. Nora will be incorporating this information into Version 8 which will be sent to Scott by Monday morning, November 1.

Net Metering for Systems with "Combined" Technologies.
Gerry Torribio's document was distributed before the meeting and discussed. The Technical Group's comments have not yet been integrated. Bill Cook agreed to help Gerry incorporate this information into the document.

Several working group members questioned what fees and costs would apply to a Combined Technology system. If certain fees or system upgrade costs are borne by the utility in a net metering application and by the applicant in a non-eligible system, which fees apply if the project contains both a net metering and non-net metering elements?

Discussion continued on whether a Reverse Power Relay between the net metering eligible and non-net metering eligible generation and a meter at the point of common coupling would be sufficient to permit combined technologies. The utilities suggested this would not be acceptable under the current tariff structures because of the need to determine appropriate standby and other charges for the non-qualifying portion of the system.

Interconnection Fees/Costs
PG&E provided a revised version of the cost data matrix it provided at the October 13 meeting in Fontana. Several group members expressed concern that other utilities have not provided comparable costs and that PG&E's numbers may not be representative for all utilities.

Kim Whitsel of PG&E expressed concern that the pre-parallel inspection component continues to be a major cost element of the interconnection application. She stressed that the current fee structure does not provide an incentive to assure that repeat inspections are kept to a minimum. It should be noted that the actual cost of processing and completing an interconnection (short of incremental upgrade costs which are borne by the applicant) exceeding the application fee are absorbed in the utility's distribution cost component of rates. That being said, the group briefly discussed the distinction between how a distribution system improvement cost and an incremental system enhancement cost are classified. Scott reiterated that, regardless of the debate about the relationship between application fees and application costs, the fees were never intended to cover the costs.

Dispute Resolution Process
Scott stated that some working group members have problems with the current Rule 21 dispute resolution process and have suggesting changes. Others by contrast, specifically SCE, believe the process is working just fine. PG&E distributed a matrix comparing the Rule 21 dispute process with Massachusetts process. For purposes of the report, the group is attempting to incorporate specific experiences related to the process, including case studies from developers and utilities. To date, Real Energy has submitted its case study to the group. PG&E intends to provide some descriptive to the working group by November 1. Pat Aldridge of SCE will forward specific language on Rule 10 and potentially a graphic explaining the general complaint process presently used by the CPUC.

Interconnection Rules for Network Systems
This item is largely complete. The Technical Group will look at adding background information into the process outline including but not limited to the activities of the Massachusetts DG Collaborative and the Distributed Utility Integration Test (DUIT) program. The Technical Group will also develop timing for the process.

The Massachusetts Technology Collaborative met on October 20 to discuss the role of DG in distribution planning. Chuck Whitaker's initial comments were that they had similar issues and are undertaking a variety of areas where there it is beneficial to collaborating with them in the future. The Massachusetts Technology Collaborative meets monthly and will next meet on November 17. It is working on network systems and systems planning at this time.

Technical Breakout Group Notes

- **Review new addition to Line Section definition:**

The group reviewed the following Line Section definition addition:

Transformer and the Shared Secondary as a "Line Section"

A service transformer supplying multiple services in a shared secondary configuration system maybe considered a line section. This transformer and its connected secondary system is part of the Utility's Distribution System, and should be reviewed as line section for loading and voltage concerns.

This definition was reviewed and discussed. The question was raised as to whether a single-phase shared secondary should be considered a "line section" according to the above definition. Although it would currently fail many small ENET projects according to the 15% of line section screen, it was

decided that utilities could use this definition internally, since ENET customers are not required to pay interconnection fees. Although voltage concerns are possible in a neighborhood with high penetration of ENET systems such as PV, usually those subdivisions are identified by the utility early in the process. The basic view of the group was to not prevent a shared secondary from being viewed as a Line Section, but that there is no need to specifically add language to the definition to force all utilities to consider a shared secondary a line section.

- **Establish process to address OIR task :**

Next the group reviewed the objectives and tasks developed by Chuck Whitaker and reviewed the paragraph introduction that was developed by Moh Vaziri and Jeff Goh. The introduction was rewritten in the following form and the Objectives and Tasked were discussed and revised to provide additional direction to Scott Tomashefsky to include in his report to the CPUC.

<u>V. - Interconnection Rules for Secondary Network Systems</u>

Introduction:

The rules for interconnecting generating facilities to secondary network systems are different compared with interconnections to radial systems. In the secondary network system, there are technical requirements resulting from the design and operational aspects of network protectors not employed on radial systems. In California, the major secondary network systems are located mainly in the metropolitan areas of San Francisco, Oakland, and Sacramento. Several distributed generation projects have been interconnected to various secondary network systems during the past few years. Due to lack of technical information and clear guidelines, there have been issues with some of these interconnections. By the current screening process in Rule 21, interconnections involving secondary networked systems are advanced to the "supplemental review" stage. Due to the nature of the protective schemes used in the networked systems, most of the interconnections now require a detailed study. Without interconnection guidelines, utility companies now have to study each project and establish their own interconnecting requirements on a case by case basis.

There has been an interest from the California Energy Commission's Integrated Energy Policy Report committee and other stakeholders to determine if any simple and uniform rules for interconnection of DG to networked systems may be added to Rule 21. Similar interconnection issues have also been identified in other parts of United States showing the need for guidelines. Some of the on-going efforts by other utilities and engineering groups addressing this issue are as follows:

- (a) Massachusetts DG Collaborative Technical Working group is conducting meetings on this issue.
- (b) California Energy Commission in collaboration with DOE has already approved a new testing program to study network interconnnections. Testing will conducted by the Distributed Utility Associates in California upon completion of the existing DUIT phase 1.
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Rule 21 technical working group had developed the following plan outline for this purpose.

Objectives:

- Define the issues (load, fault—Types: Spot, Area)
- Develop Supplemental Review information
- Determine general requirements (include in section D)
- Determine if opportunities exist for simplified interconnection (if so, include in section I)

Tasks:

1. Develop definitions, characteristics, and design philosophies for different types of networks to provide a common basis of understanding (DUIT report will be out for review and comments by the end of the month)
2. Identify network systems in CA
   - Locations
   - Physical characteristics
3. Identify the stakeholders nationwide who may be able to provide information
   - Utilities with network systems
   - DG suppliers
   - Customers on network systems who may be interested in DG
   - Regulators
   - Network equipment providers and other experts
4. Identify and Investigate other Projects and sources of documentation
   - DUIT proposed Network meeting and Network-related testing
   - Mass Tech Collaborative
   - PG&E white paper and other technical literature
   - IEEE 1547 (project proposed for a PAR (IEEE project authorization request))
   - Manufacturer data sheets/white papers
5. Identify and investigate the availability of other Rules and requirements
6. Identify and investigate existing DR on networks
7. Identify problems and solutions
   - Experience from utilities
   - Experience from system integrators
8. Investigate costs of protection schemes and protector rework

- **Export Screen Final Version for review:**

After months of debating the wording for the export screen question—which only served to add to the growing list of possible questions—an idea was put forward at the previous meeting to change the screen questions in Section I into titles. The group had been wasting an inordinate amount of time trying to hone screen questions, when the discussion should have focused on the content of the screen itself—this was generally viewed as a reasonable approach to refocus the discussion on the important issues.

Taking the guidance provided by Moh Vaziri in the Proposal 1, dated 9-21-04, the group decided to take the melded version of Moh's proposal that used a title for the export screen rather than a question. Also option 4 and option 5 were adjusted so that they have the same language. The question was raised as to the need to have a separate option 4 and 5 since ENET is a contractual

issue, not an interconnection issue. The following proposed language is submitted for final review and approval at the December 2 meeting in San Diego:

Proposal - Changes to Screen 2:

Note: Option 3 and Option 4 have swapped numbers. Changes from 2004 Rule 21 in Turquoise.

I.3.b. Screen 2: Export Screen

Pass

- In order to pass this screen, the Generating Facility must either prevent export across the PCC by incorporating option 1, option 2, or option 3, or ensure export is limited to negligible levels by satisfying all of the conditions in option 4 or option 5

Fail

- All other Generating Facilities fail this screen.

Option 1: ("Reverse Power Protection"):
To ensure power is not exported across the PCC, a reverse power Protective Function may be provided. The default setting for this Protective Function, when used, shall be 0.1% (export) of the service transformer's rating, with a maximum 2.0 second time delay.

Option 2 ("Minimum Power Protection"):
To ensure at least a minimum amount power is imported across the PCC at all times (and therefore, that power is never exported), an under-power Protective Function may be provided. The default setting for this Protective Function, when used, shall be 5% (import) of the Generating Facility's total Gross Nameplate Rating, with maximum 2.0 second time delay.

Option 3 ("Relative Unit Size"):
This option, when used, requires the Net Nameplate Rating of the Generating Facility to be so small in comparison to its host facility's minimum load, that the use of additional Protective Functions is not required to ensure that power will not be exported across the PCC. This option requires the Generating Facility's Net Nameplate Rating to be no greater than 50% of the Producer's verifiable minimum Host Load over the past 12 months.

Option 4 ("Certified Non-Islanding Protection"):
To ensure that the export of power across the PCC is limited to acceptable, negligible levels, this option, when used, requires that all of the following conditions be met:

a) The Generating Facility must be Certified as Non-Islanding.
b) The total Gross Nameplate Rating of the Generating Facility must be no more than 25% of the nominal ampere rating of the Producer's service equipment;
c) The total Gross Nameplate Rating of the Generating Facility must be no more than 50% of the Producer's service transformer capacity rating. (This capacity requirement does not apply to Customers taking primary service without an intervening transformer);

d) The total Gross Nameplate Rating of the Generating Facility must be no more than
<we need to pick one of the following >
<10% of the Load Carrying Capability of the smallest primary conductor serving the Generating Facility >
--OR--
<the equivalent of 10 amps primary on EC's Distribution System (75kW at 4kV, 200kW at 12kV, or 360kW at 21kV)>

Option 5 ("ENET or Expanded ENET"):

To ensure that the export of power across the PCC is limited to acceptable, negligible levels, this option, when used, requires that all of the following conditions be met:

a) The Generating Facility must be Certified as Non-Islanding.
b) The total Gross Nameplate Rating of the Generating Facility must be no more than 25% of the nominal ampere rating of the Producer's service equipment;
c) The total Gross Nameplate Rating of the Generating Facility must be no more than 50% of the Producer's service transformer capacity rating. (This capacity requirement does not apply to Customers taking primary service without an intervening transformer);

d) The total Gross Nameplate Rating of the Generating Facility must be no more than
<we need to pick one of the following >
<10% of the Load Carrying Capability of the smallest primary conductor serving the Generating Facility >
--OR—
< the equivalent of 10 amps primary on EC's Distribution System (75kW at 4kV, 200kW at 12kV, or 360kW at 21kV)>
e) The facility must qualify for Net Energy Metering as defined by the CPUC.

The ampere rating of the Customer's Service Equipment to be used in this evaluation will be that rating for which the customer's utility service was originally sized or for which an upgrade has been approved. It is not the intent of this screen to allow increased export simply by increasing the size of the customer's service panel, without separate approval for the resize.

Significance:

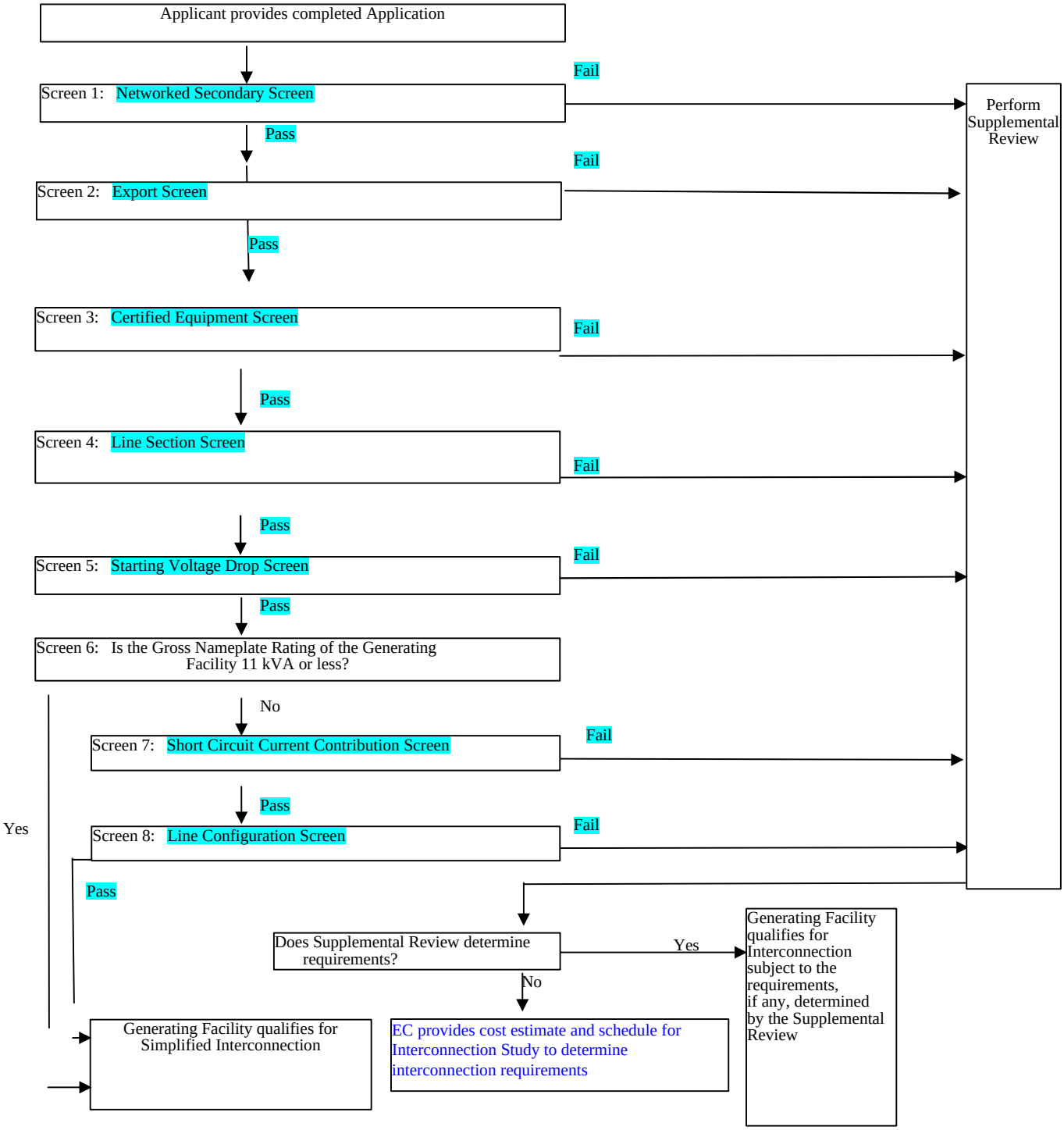
1. If it can be ensured that the Generating Facility will not export power, EC's Distribution System does not need to be studied for Load Carrying Capability or Generating Facility power flow effects on EC voltage regulators.

2. This screen permits the use of reverse-power or minimum-power relaying at the PCC as a positive Anti-Islanding Protective Function (Options 1, 2 ~~and 3~~).

3. This screen allows, under certain defined conditions, for Generating Facilities that incorporate Certified Non-Islanding protection to qualify for Simplified Interconnection without implementing reverse power or minimum power Protective Functions (Option 4 and Option 5).

Proposal 2 - Changes to Review Process Flowchart:

Initial and Supplemental Review Process Flow Chart



To Do List:

- Final versions of issue documents and comments should be provided to Scott Tomashefsky by November 1, 9:00 AM. These include submissions by Nora Sheriff, Jerry Jackson, Gerry Torribio, Bill Cook and others.